

- 6 -

CLAIMS

1. An automatic system (100) for the conservation of samples (19) comprising at least a controlled-temperature thermo-insulated storage chamber (1) containing a set of disks (9) fitted with a radial slot (14),
5 locations (17) for storing said samples (19) and a Cartesian robotic system (4), contained in a chamber (2) above and separated from the chamber (1) by means of an insulating shelf (6) fitted with a controlled access opening (7), the Cartesian robotic system (4) being fitted with a pick-up device (18) that moves the samples (19), characterized in that said pick-up device (18)
10 moved by the Cartesian system (4) can reach any location (17) of one of the disks of the stack (9) passing through, sequentially, the controlled-access opening (7) of the insulating shelf (6), the radial slots (14) of the set of disks (9) lying above the location (17) involved.

2. System as per claim 1 in which every disk of the stack (9) is held by
15 a group of three supports (23) positioned at 120° at the periphery of each single disk.

3. System as per claims 1 and 2 in which each single disk (9), and only one disk at a time, can be rotated by means of a device (21), which couples on the corresponding periphery of each disk (9).

20 4. System as per claim 3 in which a complex of toothed wheels (21) always in contact on the peripheral toothing of the corresponding disks (9) and of a engaging device (24) integral with a motorized shaft (25) which is suitably commanded places in rotation only one toothed wheel (21) and thus the corresponding disk of the stack (9).

25 5. System as per claims 1 and 4 in which all the disks (9) are held blocked by the "0" device (12) with the slots (14) aligned vertically, except for the disk whose rotation brings the location (17) under said slots.

30 6. System as per claims 1, 4 and 5 in which the disks blocking device (12) is fitted with a sensor (13) capable of monitoring the position of said

blocking device and, at the same time, the position of "0" of each disk held blocked.

5 7. System as per previous claims in which the disk of the stack (9) that is placed in rotation by the device (21) is monitored in its angular position by means of an encoder mounted on the motorized pulling shaft (25).

8. System as per claim 1 in which the chamber (2) contains a device for identifying the samples (11) in input to and output from the system (100).

10 9. System (100) as per claim 1 in which the operations of inserting and extracting the samples from the system comes about by means of an I/O drawer (20) that connects the external world with the chamber (2) containing, amongst other things, the robotic device (4).

15 10. System (100) as per claim 1, in which the access to the samples can come about only by means of the robotized system (4) and that is, it cannot come about with manual type intervention.

11. System (100) as per claim 1, in which the controlled-access opening (7) on the thermally insulated panel (6) is fitted with bodies that keep said opening closed so that the specific bodies open said opening only when the sample pick-up device passes.

20 12. System (100) as per claim 1, in which the pick-up device (18) of the sample (19) is equipped with an optical sensor (10) for monitoring the correct positioning of said pick-up device in relation to the location of the sample.

25 13. System (100) as per previous claims in which each mechanism for driving and access to the storage chamber (1) is contained in the chamber (2) permitting maintenance activity to be carried out on said devices without interfering with the controlled-temperature chamber (1).

30 14. System (100) as per previous claims, in which the entire management of the devices of the system is controlled by an N/C system driven by a dedicated management SW.

- 8 -

15. System (100) as per previous claims, in which the robotized system is controlled by an SW that records every operation set up by an operator and carried out by the system (100).